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ABSTRACT

Science journalism in the United States can be traced back to at least 1690 when a newspaper called "Publick Occurrences" included two paragraphs of medical writing in one issue. In 1752, the "Pennsylvania Gazette" carried an account by Benjamin Franklin of his "electric kite" experiment. Since then, inventions and scientific activities have received regular news coverage. There have been times, however, when science writing developed a bad reputation because it was used in sensational and not always honest ways to increase the circulation of newspapers. In spite of this, surveys have shown that public attitudes about the positive effects of science on the world have existed for at least a full generation. The social implications and the politics of science are becoming increasingly important as science journalism plays an essential role in providing background for vital public decisions. Approximately 5% of newspaper space is consistently allocated to items about science; however, except for some "spectaculars," commercial television has contributed little to the continuing discourse between scientist and citizen. (TJ)

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PERSPECTIVES ON SCIENCE WRITING

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TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC) AND USERS OF THE ERIC SYSTEM."

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"It is of great importance that the general public be given an opportunity to experience, consciously and intelligently, the efforts and results of scientific research. It is not sufficient that each result be taken up, elaborated, and applied by a few specialists in the field. Restricting the body of knowledge to a small group deadens the philosophical spirit of a people and leads to spiritual poverty."

-- Albert Einstein

"There is no more threatening and no more degrading doctrine than the fancy that somehow we may shelve the responsibility for making the decisions of our society by passing it to a few scientists armored with a special magic. ... The world today is made, it is powered by science; for any man to abdicate an interest in science is to walk with open eyes towards slavery."

-- J. Bronowski

"Like it or not, science is an irreversible force, at least as long as civilization endures; for no educated man can ever think as if it had not been, and there is no chance whatever of calling a halt to it, any more than of junking all the knowledge it has given us about the universe and man. The sensible policy would seem to be an effort to feel more at home with it, immediately for the sake of historical understanding, ultimately for the sake of maintaining our freedom."

-- Herbert J. Muller.

To understand the problems of teaching news coverage of science, technology, and medicine, it may be helpful to realize that such reporters have a great many things going for them.

*** This field of American journalism has a long but erratic history going back to Publick Occurrences (1690).

*** Despite the complexities of translating the technical language of such advance for the person in the street, considerable favorable public attitudes toward greater understanding of science have existed over recent decades.

*** There is a general recognition that science journalism, unlike some other types of news coverage, plays an essential role in providing background for vital public decisions that may affect health, wealth, and, potentially, global survival. Here social responsibility may run rampant.

* * * * *

Benjamin Harris, publisher of Publick Occurrences, included two paragraphs with a total of 272 words when his paper came out September 25, 1690, with the aim of quieting "many False Reports, maliciously made, and spread among us." The items told of "Epidemical Fevers and Agues" becoming common in some parts of the country and "The Small pox which has been raging in Boston, after a manner very Extraordinary." Thus medical writing in the American press can be traced back nearly a century before founding of the United States.

Benjamin Franklin, Colonial printer, scientist, and politician, told of his "Electric Kite" experiment in the October 19, 1752, issue of the Pennsylvania Gazette, which he then published. That Gazette also carried an advertisement announcing the new Poor Richard's Almanac for 1753, which contained Franklin's article on "How to Secure Houses, etc., from Lightning." With such talent for promotion, it is little wonder that Franklin ended up not only famous but wealthy, too.

During late August of 1835, the New York Sun published a series of seven articles on "Great Astronomical Discoveries, lately made by Sir John Herschel at the Cape of Good Hope." Written by Richard Adams Locke, an Englishmen who had attended Cambridge before coming to the United States in 1832, the Sun series was called "probably the greatest 'fake' ever perpetrated by an American newspaper" by Prof. Willard Grosvenor Bleyer of the University of Wisconsin. The articles included an elaborate description of batlike men and women who were said to inhabit the moon.

The successful demonstrations of technological improvements, such as Robert Fulton's steamboat run from New York City to Albany (1807), the operation of the first railroad car by steam in Baltimore (1830), Samuel F. B. Morse's invention of the telegraph (1844), and Alexander Graham Bell's public display of the telephone (1876) all received mentions, sometimes little more, in the contemporary press. It took proof of what the New York Herald called the "Annihilation of Space" when a prospective vice-presidential nominee in Washington telegraphed Democratic delegates in Baltimore that he would not run before Morse's discovery received substantial coverage in print.

After James Gordon Bennett, Jr., gave Henry M. Stanley the order "Find Livingstone," the resulting series of articles told Americans about a previously little known African heartland and made exploration an adventure story for readers. The news items had many of the vicarious thrills of space exploration a century later.

Horace Greeley, whose New York Tribune editorials ranked along with the Bible as required reading matter on the frontiers of the Middle West and West, wrote a series under the general title of "What I Know of Farming." He had moved to Chappaqua, N. Y., in Westchester county and this gave him a chance to expound on his interest in agriculture and some other phases of science. After Greeley's death, the Tribune began a weekly column called "Science for the People" on March 3, 1877. The feature lasted for some years and was eventually moved to the paper's Sunday edition in 1879.

The New York Herald of December 21, 1879, broke news of the electric light with a headline, which read in part:

EDISON'S LIGHT

The Great Inventor's Triumph in
Electric Illumination

A SCRAP OF PAPER

It Makes a Light, Without Gas or
Flame, Cheaper than Oil

...

Scooped on the original announcement, the New York Tribune sought to belittle the invention until declining gas stocks on the New York Exchange forced the staff to offer such negative stories as were available.

The Pulitzer-Hearst feud for circulation involved coverage of science and pseudo-scientific events. The trauma of having their activities misrepresented was so intense that even decades later and despite the rise of professional, full-time science journalists, older scientists told newcomers of the "horrors" of having work reported in the mass media.

Many dailies flubbed the Wright Brothers's successful trial of "A Machine that Flies," as the Kansas City Star called it in a single-column front-page dispatch from Norfolk, Va. Coming only nine days after the "final debacle" of sttempts to fly by Samuel Pierpont Langley, world renowned secretary of the Smithsonian Institution, a news item about a successful flight on a lonely beach near Kitty Hawk, N. C., won scant acceptance from many news editors. Among the papers that failed to print the story the day after the Kitty Hawk flight were the New York Tribune, Chicago Tribune, Kansas City Journal, and Denver Republican.

World War I helped launch science writing as we know it today. As in the later World War, scientists were mobilized to help win and they had to discover new ways to produce dyes and other chemicals that had come principally from Germany. Developments came rapidly and the papers reported on them.

E. W. Scripps discussed plans to establish "The American Society for the Dissemination of Science" and eventually funded the launching of Science Service with Dr. Edwin E. Slosson as the "editor responsible for the collection and preparation of copy" and Watson Davis as his assistant. The first issue of the Science News Bulletin was dated Saturday, April 2, 1921. Note the careful avoidance of April Fools' Day.

At The New York Times, Adolph Ochs and his brilliant managing editor, Carr V. Van Anda, began expanding science news coverage. This included a special cable from London telling of observations confirming part of Dr. Albert Einstein's theory of relativity and another special cable about the opening of the tomb of King Tutankhamen, the Egyptian ruler. Thus The Times had far more to print than the five paragraphs supplied by the Associated Press.A second-day follow-up item on the front page (December 1, 1922) was headlined:

GEM-STUDDED RELICS
IN EGYPTIAN TOMB
AMAZE EXPLORERS

Alva Johnston of The New York Times was assigned to cover the 1922 sessions of the American Association for the Advancement of Science in Cambridge, Mass. Some days, The Times devoted considerably more than half a page to Johnston's dispatches from Cambridge. For his coverage, Johnston won a Pulitzer prize, the first of three awarded in this field in half a century. Several years later, Johnston left the paper to become a magazine contributer, leaving science reporting, in the main, to others. Waldemar Kaempffert become The Times's science editor.

By the early 1930's, a small group of writers were regularly making the "science circuit" of the principal science and medical conventions. They discussed forming a professional organization and on September 14, 1934, an eight-article constitution was approved and formal announcment of the National Association of Science Writers was made. Among the charter members were Davis; Kaempffert; Howard W. Blakeslee of the Associated Press and "founding grandfather" of three generations of science news writers; David Dietz of the Scripps-Howard newspapers; William L. Laurence of The New York Times who was to win a Pulitzer prize for his coverage of atomic energy during World War II and after; John J. O'Neill of the New York Herald Tribune; and Gobind Behari Lal, science editor of the Hearst newspapers. Five from this group won the 1937 Pulitzer prize for their coverage of Harvard's tricentennial, which featured reports on the progress of man to understand himself and his world. Prize winners were Blakeslee, Dietz, Lal, Laurence, and O'Neill.

World War II with development of the atomic bomb and, earlier, radar again stimulated media interest in science and technology and explaining it all to the public. After the Hiroshima bomb dropped, the rush for writers to tell the news to the general media users was tremendous. Almost literally a shipload of correspondents went out to cover the Bikini bomb test. The U. S. Navy was flying reporters to spend weeks in Antarctica so they could tell about explorations there. After the first Soviet Sputnik, a flood of news experts sought to inform the American public about what was going on. Cape Canaveral, Fla., and later Houston became as much a part of science and technical news coverage as any national sessions of the A.A.A.S. or the American Medical Association.

The first moon walk was a superspectacular as well as a technological achievement and the media covered both aspects. The National Aeronautics and Space Administration accredited 3,597 media personnel for the Apollo 11 liftoff to the moon, according to Editor & Publisher (February 13, 1971). David Perlman of the San Francisco Chronicle gave a vivid picture of CBS coverage when he wrote that "behind Walter Cronkite and Eric Sevareid stood 37 correspondents, 9 researchers assigned from the regular CBS news research staff, 6 special scientific and technical consultants, 22 producers, 13 directors, 16 engineers and 65 guest discussants who ranged all the way from Lyndon Johnson and Spiro Agnew to Sir Bernard Lovell, Harold Urey, James D. Watson, Buckminster Fuller and Gloria Steinem!" Perlman added, "The efforts of NBC and ABC were equally valiant."

Advances in medicine were not neglected when Dr. Jonas Salk and Dr. Albert Sabin developed vaccines for infantile paralysis or poliomyelitis and others made public health better. Dr. Alfred Kinsey's institute uncovered new facts about sexual behavior and the media eagerly reported what he had found. Environmentalists sought to make the atmosphere, water, and air more healthful and science journalists told of their work. The energy crisis was covered as economics, politics, and science.

Science news personnel in the late 1970's still confronted many of the same problems as their predecessors decades and even centuries ago. How were they to deal with reports that a human being had been cloned, claims of various partisans in the nuclear energy controversy, the hazards of recombinant DNA, and the conflicting arguments over the need for swine flu vaccine?

* * * * *

Public attitudes about the positive net effects of science on the world have existed for at least a full generation.

In a 1957 survey for the National Association of Science Writers, the Survey Research Center, University of Michigan, asked a national sample of 1,919 Americans, "All things considered, would you say that the world is better off or worse off because of science?" The results showed:

	Percent
Better off	88
Both or about fifty-fifty	3
Worse off	3
Don't know	5
Not ascertained	1

Source: Survey Research Center, University of Michigan, "The Public Impact of Science in the Mass Media: A Report on a Nation-wide Survey for the National Association of Science Writers." 1958 P 179

During the early 1970's, the Harris Survey asked 1,548 American households whether modern life is much better off due to the wonders that science has brought. The results showed:

	Percent
Agreed	81
Disagreed	10
Not sure	9

Source: The Harris Survey, Release of February 17, 1972.

During the 1970's, the Opinion Research Corporation, Princeton, N. J., conducted three surveys of U. S. public attitudes toward the nation's scientific endeavors and the results have been distributed by the National Science Foundation.

Results from a question, "Have science and technology changed life for the better or for the worse?" were:

	Percent		
	1972	1974	1976
Better	70	75	71
Worse	8	5	7
Both	11	11	12
Neither/ no effect	2	3	3
No opinion	9	6	7

Source: Cited in National Science Board, "Science Indicators, 1976" National Science Foundation, 1977 P 173

Another ORC question inquired, "Overall, do science and technology do more good than harm, more harm than good, or about the same of each?" Results were:

	Percent		
	1972	1974	1976
More good	54	58	52
More harm	4	2	4
About the same	31	31	37
No opinion	11	10	7

Source; National Science Board, op cit. P 174

While there have been fluctations over the years in attitudes toward science, little anti-sciencism has been manifested. Note, for instance in the table above, that the "more harm" category remained at less than four percent during all three survey years. Also one should keep in mind that during the 1970's, there was an erosion of public confidence in many institutions.

Those who felt science and technology had done more good than harm were asked to cite some of the "good things" and they listed them in this descending order:

	Percent	
	1972	1976
Improvements in medicine	79	81
Space exploration	26	24
General improvements (products and living conditions in general)	12	14
Protecting environment, conservation	12	11
Electric and electronic products	9	11
Improved methods of travel and transportation	9	9
Food and agriculture	9	7
Energy problems	2 **	5
Improved communications	3	4
Other answers	16	9
Don't know	4	4

** Included only atomic energy in 1972

Source: National Science Board, op cit. P 174

In 1971 and again in 1977, the Newspaper Advertising Bureau surveyed media news consumption by Americans and found public interest in science-related content to be increasing. In 1971, items on "Science and inventions" were not among the content categories most often read. "Science and inventions" ranked eleventh. By 1977, such articles were among top ranked categories. Science-related news items on energy, public health and the environment rated more prominently as "very interesting" than comics or personal advice syndicated columns. Thus a shift toward more sophisticated media consumption was detectable and the trend aided science news.

The top ranked news content categories were:

1971 *	1976 **
1. Accidents, disasters, natural phenomena	1. Energy problems ***
2. Letters to the editor	2. Accidents, disasters, natural phenomena
3. Crime	3. Public health, welfare
3. General non-local human interest	4. Weather
4. Advice columns	4. Taxes
4. Obituaries	4. Letters to the editor
5. Public health, welfare	5. Social problems, protest
5. Taxes	6. Environment
6. Social problems, protest	7. Wars, rebellions
7. Comics	7. U. S. Government domestic actions
8. Racial news, minorities	8. Science, inventions
8. Religion	9. News in brief
9. Environment	9. Crime
9. U. S. Government domestic actions	10. Racial news, minorities
9. Wars, rebellions	10. Political columns
10. Labor, wages	
10. State and local government	

* Based on the percentage of respondents that reported reading the items.
** Based on the percentage of items rated "very interesting" because sample included some non-readers.
*** Not included as a content category in 1971

Source: Newspaper Advertising Bureau, Inc., "Readership and Coverage of Science and Technology in Newspapers." 1978 Appendix, Table 1

In the 1977 survey, participants were asked to imagine themselves as newspaper editors and to indicate to which of 34 content categories they would give "a lot," "some," "a little," or "no" space. Among the top 10 categories to be given more space were "Environment" plus "Health and Nutrition." Toward the end of the list were items about "Mysterious Events, Psychic Predications" plus, in the very last position, "Astrology, Horoscopes."

In view of the considerable space devoted in many publications to these unfavored categories, could one speculate that quite a few editors have lost contact with their potential readership?

* * * * *

Despite variations depending on the ebb and flow of what happened "yesterday", five percent seems to be almost a mystical figure for the amount of newspaper space allocated to items about science, technology, and medicine. Of course, there are exceptions. For instance, The New York Times's "Men Walk on Moon" (July 21, 1969) front page had only a "Today's 4-Part Issue of the Times" and an index that did not deal exclusively with the Apollo 11 flight and landing.

Even Publick Occurrences's two paragraphs figured out to approximately five percent of the nearly 5,300 words in America's first newspaper.

In 1942, Watson Davis, director of Science Service, reported that 5.7 percent of the reading-matter space of newspapers was devoted to science, "directly and indirectly," and 1.2 percent was occupied by news stories that were "primarly science."

From 1939 to 1950, the American Newspaper Publishers Association sponsored readership surveys of 130 U. S. dailies and Dr. Charles E. Swanson, then research professor at the University of Illinois, analyzed the readership appeal of 40,158 news-editorial-feature content. He found 1.1 percent in the "Health-Safety" category and 0.6 percent in "Science-invention."

The Newspaper Advertising Bureau's 1971 and 1977 surveys yielded fairly comparable figures. These showed:

	Percent	
	1971	1977
Science and inventions	1.0	0.7
Environment	1.6	1.7
Public health, welfare	2.4	2.8
Energy problems	**	0.7
	5.0	5.9

** Not coded in 1971

Source: Newspaper Advertising Bureau, op. cit. Appendix Table 4

The Newspaper Advertising Bureau's most recent survey estimated by "even a generous count, including editors who cover such areas as science and education" that only 11 percent of American daily papers had science editors.

Despite the extensive space spectaculars and a few other "shows," a dreary picture focuses for much of television's coverage in this area. David Perlman, a former science editor of the San Francisco Chronicle, wrote four years ago:

"But in terms of continuing discourse between scientist and citizen, American commercial television is the most bankrupt of the mass media."

The defect substantially continues despite some good local programs, especially on the continuing energy "crisis," and infrequent network scheduling. Public television's "Nova" series and others have attracted an appreciative, but limited, audience.

Possibly the mass media's greatest contribution to public understanding of science will take place when commercial television develops programs that will make science, technology, and medicine both entertaining and socially useful. But first they have to win slots on the schedules.

Science reporting of the recent past has moved from the "Gee Whiz!" coverage that, in its most sensational forms, blighted effective cooperation of journalists with scientists, engineers, and doctors. Social implications have become increasingly important and so have the politics of science, especially how government makes up its mind about the funding of future research and development and their applications. But regardless of these changes, the essentials for future science journalism remain the ability to transfer ideas from one brain to another and the requisite background to ask intelligent questions and to understand the answers.

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